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NOTES ON THE MORaine OF THE GLACIER SOUTH- WEST OF TOPEKA.

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MR. B. B. SMYTH, in volume XIV of the Transactions of this Academy, described the course of this moraine through Shawnee county, and I desire merely to add a little concerning the boulders in the moraine near Burnett's mound.



KANSAS GLACIER MORaine,
Southwest of Topeka, near Burnett's Mound.

The drift in the ridge studied was less than eighteen feet thick, as was shown by a well on the ridge. A roadside excavation exposed about six feet of drift, stratified above and mostly unstratified below. One or two boulders were in positions of unstable equilibrium, as in all moraines not water-laid. The drift consisted of northern and local material. Fine-grained quartzite predomi-

nated everywhere at the surface, but the boulders of the deeper drift were fine and coarse quartzite, gray granite, gneiss, syenite, dyorite, and limestone. Many of the last contained *Fusulinas*, and much resembled the Upper Coal Measure limestones. Many of the boulders, including the limestone boulders, were planed and striated. The great age of this moraine, possibly a million years, was shown by the fact that the surface boulders were all fine-grained quartzite, while the protected ones were of mixed species. Even the coarse quartzite, where exposed, was badly weathered. The boulders of the deeper drift were common archæan species, and, according to all indications, were brought to Kansas by the same ice movement which brought the quartzite. The Kansas glacier may have picked up the granite, etc., in northern or central Minnesota, the quartzite in southwestern Minnesota or eastern South Dakota, and the limestone in northern Kansas.

Professor Popenoe showed us what seems to be the pseudomorph of the end of a huge calcite crystal consisting of basalt. Molds of similar crystals in great masses of copper from the copper mines near the western end of Lake Superior were on exhibition at the World's Fair at Chicago. This pseudomorph may have come in the Kansas glacier from that locality near Lake Superior.
